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DEBT
MANAGEMENT

Insights and Tools
From Selected Nations





G A O

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United States General Accounting Office
Washington, DC 20548

November 21, 2001

The Honorable Bill Thomas
Chairman
Committee on Ways and Means
House of Representatives

The Honorable E. Clay Shaw, Jr.
Chairman, Subcommittee on Social Security
Committee on Ways and Means
House of Representatives

The Honorable Pete V. Domenici
Ranking Minority Member
Committee on the Budget
United States Senate

For 4 years, the United States has had a budget surplus that has resulted in decreasing debt levels. Debt held by the public fell approximately \$453 billion from the end of fiscal year 1997 to the end of fiscal year 2001.¹ Although it appears now that the economy and the challenges of combating terrorism will prompt deficits for the short term, we may again return to surpluses. In fact, we and others have argued that surpluses will be needed in the future to prepare for the long-term costs of the baby boom generation.

As we have previously reported, deficits and surpluses present different challenges for debt management. Earlier this year² we provided you with information on how the U.S. Treasury has been managing debt as the budget was in surplus. Given the possibility for budget deficits in the near term, the Treasury is likely to face new and persistent challenges in debt management.

¹Gross federal debt includes debt held by the public and debt held by government accounts, such as the Social Security trust funds. Despite the current budget surpluses, gross federal debt continues to grow because debt held by government accounts has increased at a faster rate than debt held by the public has declined. Because debt held by government accounts is an intragovernmental transaction, it is not the focus of this report.

²See *Federal Debt: Debt Management Actions and Future Challenges* (GAO-01-317, February 28, 2001). See also *Federal Debt: Debt Management in a Period of Budget Surplus* (GAO/AIMD-99-270, September 29, 1999).

A number of other nations experienced a cycle of budget deficit and surplus before the United States. You asked us to examine the experiences of some of these nations looking for insights and lessons learned for the United States. You asked that we pay particular attention to the various techniques used, including the use of “debt buybacks.” As discussed with your staff, we selected five nations—Australia, New Zealand, Norway, Sweden, and the United Kingdom—whose recent approaches and experiences with debt management in times of surplus might have relevance to or provide useful information for the United States.

To obtain information on the experiences of these other nations in managing sovereign debt, we interviewed government officials, capital market participants, academics, and others to discuss fiscal and debt management goals, the relationship between budget changes and debt policies and actions, and the nature of the capital markets in these nations. We also gathered and analyzed documents and publications on debt management in these five nations. With respect to United States debt policy, we interviewed officials and gathered data from the Department of the Treasury, Federal Reserve Board of Governors and Federal Reserve Bank of New York, and private sector market participants in Washington, D.C., and New York City. We did our work in accordance with generally accepted government auditing standards from March 2000 through October 2001. The Treasury and the Congressional Budget Office (CBO) generally agreed with this report and provided technical comments that we have incorporated as appropriate.

Results in Brief

The five countries in our study experienced both budget surpluses and deficits during the period from 1988 through 2000. Recent budget surpluses contributed to falling sovereign public debt levels in absolute terms and as a share of the economy. Fiscal strategies, including clearly defined targets of debt to the overall economy, helped achieve budget surpluses in several countries. Setting targets that measure the size of gross or net debt³ to the economy allowed decisionmakers to track progress toward fiscal health and provided justification for continued fiscal discipline.

Whether government debt is increasing or decreasing, debt managers’ objectives remain the same. The objectives are (1) ensuring that the

³Net debt is defined as gross debt minus financial assets.

government's financing needs are met, (2) minimizing the government's cost of financing, (3) promoting efficient markets, and (4) keeping risk at an acceptable level. However, the trade-offs among the objectives may be different and the objectives themselves are not always compatible. During a budget deficit, a primary consideration is making government securities more attractive to potential investors, which includes deciding whether to introduce new instruments. On the other hand, periods of budget surpluses pose challenges to maintaining liquid⁴ benchmark issues and reducing borrowing costs. Declining levels of publicly held debt would present challenges in supporting liquid markets across the yield curve of securities.⁵ Tensions between minimizing financing cost and supporting domestic markets could be accentuated.

During periods of surplus, falling debt levels have caused debt managers in all study countries to concentrate a large number of diverse debt issues into fewer, but larger, benchmark issues that are also expected to lower the governments' financing costs. These fewer, more liquid benchmark issues generally have initial maturities ranging from 2 to 15 years. The U.S. Treasury announced on October 31, 2001, that it was suspending issuance of the 30-year nominal and inflation-indexed bonds. A Treasury official noted that the market's attention and action have shifted away from the 30-year bond toward the 10-year note. The Treasury's action will leave three Treasury benchmarks ranging from 2 to 10 years—similar to most study countries. Lower debt levels and resulting decreases in newly issued government securities also caused central banks to modify investment decisions. Central banks in most countries we studied generally held a smaller share of their portfolio in government securities and generally held an increasing share of outstanding government debt.

While we examined debt management approaches when all study countries and the United States were in budget surplus, some of these tools could be used during budget deficits as well. All study countries have deployed a number of debt management tools that the United States has used. These include debt buybacks, reopening of outstanding issues, and reducing or eliminating certain maturities of debt. Debt managers noted

⁴A liquid debt issue is one that is large enough to be traded at will and one for which the offer and purchase prices differ only slightly. Benchmark issues are used by other financial services to price their products.

⁵A yield curve is a graphical depiction of the current relationship between interest rates and time to maturity, holding all other factors (such as credit risk) constant.

that reverse auctions are a way to consolidate government debt into benchmark maturities and allow issuance of new bonds to meet market demand. While we examined buybacks used in the study countries and the United States when their budgets were in surplus, buyback results also could be achieved in times of budget deficits. Debt buybacks can have the advantage of allowing debt managers to change the characteristics of outstanding debt as well as to create larger benchmark issues. The experiences of other countries suggest that it can be difficult to manage and predict the costs of reverse auctions.

Each of the countries, except Norway, used reverse auctions⁶ that bought back debt before it matured. Unexpected changes in key information about the amount of debt repurchases and a compressed time schedule caused Sweden's buyback operations in 2000 to be more costly than expected. Australian officials said that buying back debt through means other than a reverse auction may lower costs to the government. The Reserve Bank of Australia (RBA), Australia's central bank, has conducted bond repurchases on behalf of the Australian Office of Financial Management (AOFM) for several years. However, an RBA official said that the success of these operations is a function in part of the liquidity of the bond and the level of information about the operations themselves. Debt managers in the United Kingdom planned to buy back debt using a combination of reverse auctions and open market repurchases to guard against the risk that it might be progressively more expensive to acquire securities as reverse auctions continued.

All study countries, as well as the United States, used other tools to increase market efficiency and allow increased issuance of benchmark securities. However, the other nations used a broader range of tools: open window repurchases, debt exchanges, buybacks without canceling debt, switch auctions, taps and reverse taps, and swaps.

The additional debt management tools used regularly in other nations may hold promise for the United States. Australia and the United Kingdom allow investors to offer securities to the government for repurchase at the government's option. Called "open window repurchases," these programs provide an opportunity for the government to buy back debt at market

⁶In a reverse auction, the government receives offers from market participants to sell securities at a specific price. In the United States, the Treasury accepts the most competitive offers.

rates. A variation of this approach allows investors to offer only securities nearing their maturity dates for repurchase at the government's option. These programs act as both debt management and cash management tools—reducing outstanding debt and smoothing cash flows by giving debt managers another opportunity to use excess cash flows in surplus months that may occur even in a budget deficit year. The government can choose which issues to repurchase in both a reverse auction and an open window repurchase. From the investor's perspective, open window repurchases can be advantageous because they are an opportunity for the investor to switch its funds to another investment before the security matures. While the amount of debt repurchased may be lower in an open window program, these programs may provide a lower cost buyback because the government can choose to buy when it believes market prices are advantageous. Open window repurchases likely can be done more frequently than reverse auctions and may have lower administrative costs. Debt management offices in Australia and the United Kingdom have used open window repurchases to supplement reverse auction debt buybacks.

Debt exchanges are used in three of the five study countries to promote liquidity of benchmark securities by exchanging outstanding debt securities for the newly issued, more liquid benchmark securities. Exchange offers are opportunities for investors to convert one debt security into another—for example, an older, nonbenchmark security into a new benchmark bond—at a ratio to be determined by the debt management office. The U.S. Treasury now is studying the advisability and feasibility of debt exchanges.

The United Kingdom has used switch auctions—a recent innovation—to build up liquid benchmark securities in a time of low issuance and when the Debt Management Office wished to obtain a share of a debt issue that was too large to have been considered for a debt exchange. In a switch auction, the debt management office offers to buy a certain amount of a nonbenchmark bond against the issue of a further amount of a benchmark bond, with the exchange ratio to be determined by the accepted bids. Switch auctions also may hold promise for the U.S. Treasury in supporting the creation of large benchmark issues without increasing outstanding debt.

Some debt management tools used abroad hold less promise for the United States because they may be difficult to implement in a way consistent with the value of equal access, or may require the government to assume credit risk. One-on-one offers to buy or sell debt securities between the debt management office and an individual market participant

are used in all study countries. Another tool—swaps of securities between the government and a capital market participant—may provide the opportunity for lower cost financing, but requires the government to assume the risk that the swap partner may default.

When some study countries experienced budget surpluses, their governments decided to continue to maintain their sovereign debt markets to keep a role for the central government in debt markets and/or to facilitate potentially higher levels of borrowing in the future. As a consequence, these countries have had excess cash to invest in financial assets. Particular investment decisions have been influenced by both the size of the current surplus and projections about its level over time. Two of the five nations in our study have chosen to place this excess cash in short-term, liquid accounts in either the central bank or the domestic banking system. Pending the further development of strategies, Australia has placed surplus funds in an account at the central bank. The United Kingdom initially invested the surplus in money market instruments, including liabilities of banks, using the cash to reduce net debt. Sweden and New Zealand used excess cash to offset their net government debt denominated in foreign currencies. They bought back some of their debt denominated in foreign currencies and increased foreign currency assets to offset their net remaining foreign currency denominated debt. Norway, with substantial although declining oil activity receipts projected to continue at least through 2004, created a Petroleum Fund that holds predominantly longer-term assets (bonds and equities) and assumes more risk.

The budgetary surpluses of recent years that were achieved by fiscal discipline and strong economic growth positioned us well to respond to both the events of September 11, 2001, and to the economic slowdown. Although the budget may dip into deficit in the short term, once the economy rebounds the nation may again return to surplus. For example, the Senate and House Committees on the Budget, on a bipartisan basis, endorsed a long-term fiscal policy to maintain surpluses equal to the Social Security surplus. For the long term, sustained budgetary surpluses bolster the nation's economic capacity to afford the burgeoning costs of the baby boom retirement. Other nations have used debt reduction and investment in financial assets as a way to achieve national goals and to prepare for future demographic changes. Several study nations have recognized potential governance issues associated with ownership of longer-term assets. The United States might be faced with similar issues in the future should we return to surpluses.

Budget Surpluses, Fiscal Policies, and Debt Levels

All of the study countries and the United States had budget deficits give way to budget surpluses in the 1990s. Debt changes closely followed the budget changes for four of the study countries. Debt and budget surplus targets were used as fiscal goals in some countries. Maintaining government debt at prudent or stable levels is a fiscal goal pursued in most of the countries we studied. While in budget surplus each of the study nations decided, for reasons particular to its own political and economic considerations, to maintain some level of government debt to retain a presence in the capital market. This choice may facilitate the borrowing increase that may be caused by the recent global economic downturn.

The Pattern of Surpluses and Deficits and Related Debt Levels

Table 1 below shows the pattern of surpluses and deficits from 1988 through 2000. Four of the study countries—all but New Zealand—experienced a cycle of budget surpluses, followed by deficits and then a return to surpluses in the last 13 years. Budget surpluses were achieved in the 1990s as a result of budget consolidations and economic growth.⁷ For the United States, there was a gap of nearly 30 years between its 1969 and 1998 unified surpluses. The current global economic downturn may cause some nations to return to deficits and increase debt levels.

Table 1: Budget Deficits and Budget Surpluses as Percentages of GDP, 1988 Through 2000

Country	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
United States	-3.1%	-2.8%	-3.9%	-4.5%	-4.7%	-3.9%	-2.9%	-2.2%	-1.4%	-0.3%	0.8%	1.4%	2.4%
United Kingdom	0.7%	3.0%	1.3%	0.1%	-2.3%	-5.9%	-7.1%	-5.3%	-4.4%	-3.0%	-0.4%	0.6%	1.0%
Australia	0.6%	1.8%	1.7%	0.1%	-2.9%	-4.0%	-3.8%	-2.8%	-2.0%	-1.0%	0.2%	0.7%	2.0%
New Zealand	-4.8%	-3.7%	-4.7%	-3.8%	-3.3%	-0.6%	3.0%	3.1%	3.6%	2.0%	2.6%	1.8%	1.4%
Norway	2.7%	1.8%	2.6%	0.1%	-1.7%	-1.4%	0.4%	3.5%	6.6%	7.9%	3.6%	4.9%	14.0%
Sweden	0.7%	1.9%	-1.0%	-4.1%	-9.7%	-13.6%	-8.5%	-8.1%	-1.2%	-0.3%	0.5%	4.1%	4.9%

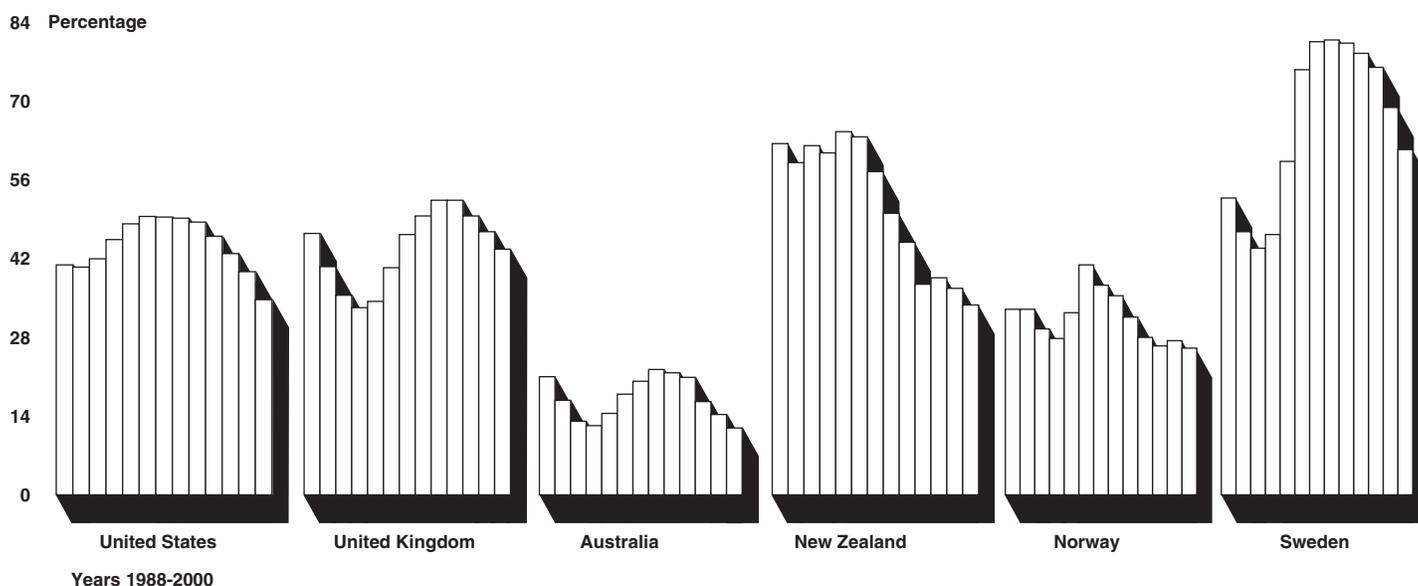
Notes: Budget surplus/deficit measures and source documents are listed in the footnote.⁸ Budget deficits are shaded.

⁷Our report, *Budget Surpluses: Experiences of Other Nations and Implications for the United States* (GAO/AIMD-00-23, November 2, 1999), describes the economic changes and fiscal efforts that resulted in budget surpluses during the 1980s and 1990s.

⁸United States – “federal surplus or deficit,” CBO, *The Budget and Economic Outlook FY 2002-2011*; United Kingdom – “public sector net cash requirement,” HM Treasury, *Budget 2001*; Australia – “commonwealth general government cash surplus,” *Commonwealth Budget 2001-2002*; New Zealand – budget measure is “financial balance” in 1988-1995, *OECD Economic Outlook*, December 2000, and “operating balance” in 1996-2000, *Financial Statements of the Government of New Zealand*, June 30, 2000; Norway – “financial balance,” *OECD Economic Outlook*, December 2000; and Sweden – “central government budget balance,” *Statens Finanser*, Ekonomistyrningsverket.

Debt changes closely followed the budget cycles for four of the study countries. Debt reductions were achieved with the budget surpluses in the late 1980s, but debt levels increased sharply when governments borrowed to finance the budget deficits in the early and mid-1990s. (See figure 1.)

Figure 1: Gross Debt as a Percentage of GDP, 1988 Through 2000



Note: Gross debt measures and source documents are listed in the footnote.⁹

The gross debt trends¹⁰ for the six countries show the response of debt levels to budget balances and economic changes. The ratios of debt to GDP in figure 1 closely track the cycles of budget surplus and deficit shown in table 1. All of the study countries except Sweden and the United

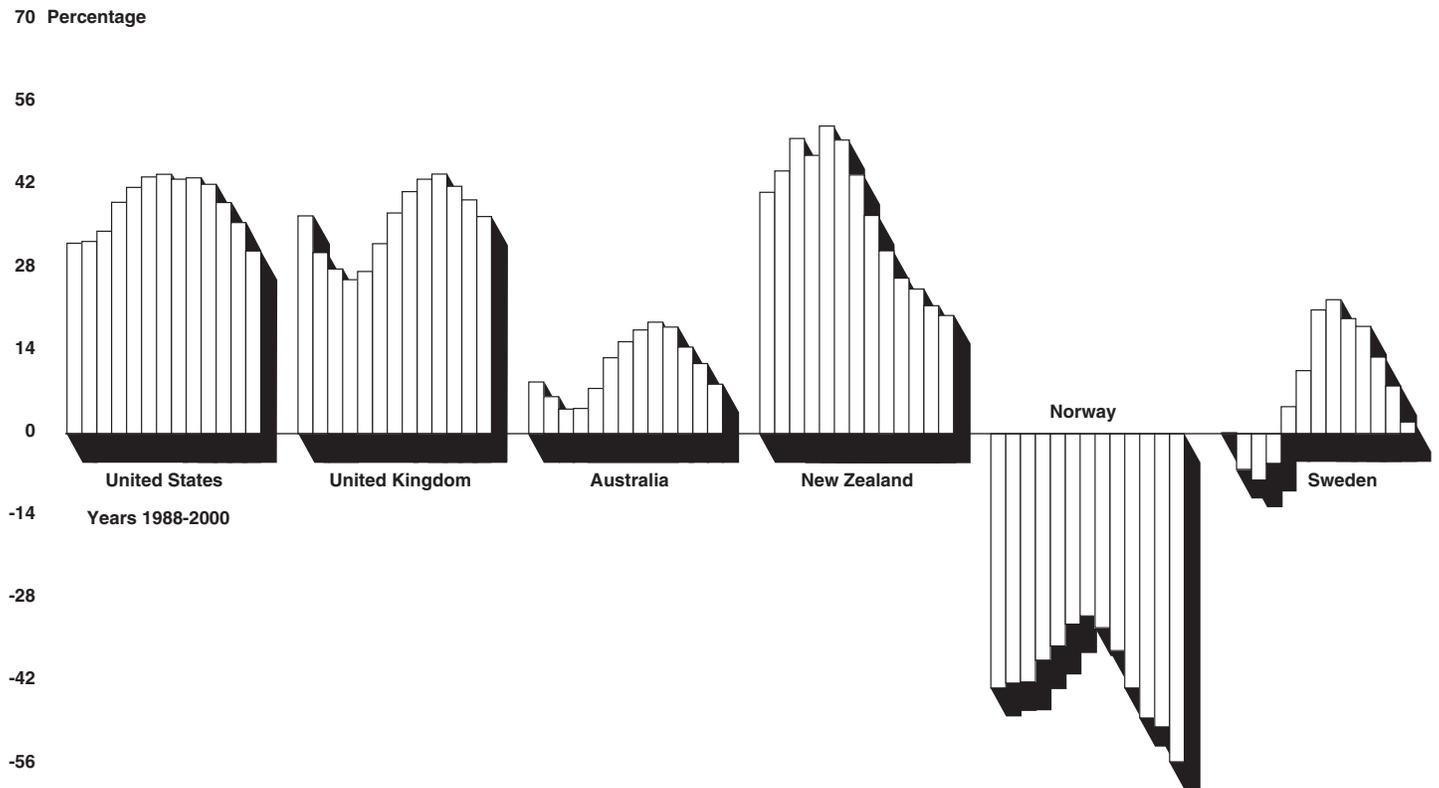
⁹United States – “federal debt held by the public,” CBO, *The Budget and Economic Outlook FY 2002-2011*; United Kingdom – “general government gross debt,” HM Treasury, *Budget 2001*; Australia – “government securities on issue,” *Australian Office of Financial Management, Annual Reports and The Treasury: Commonwealth Debt Management*; New Zealand – “Crown gross debt” in New Zealand’s *2001 Economic and Fiscal Update* and “gross total debt” in New Zealand’s Debt Management Office’s Web site www.nzdmo.govt.nz; Norway – “general government gross financial liabilities,” *OECD Economic Outlook*, December 2000; and Sweden – “central government debt” in Swedish National Debt Office’s Web site www.rgk.se.

¹⁰For this report, gross debt refers only to debt held by the public.

Kingdom show debt-to-GDP ratios in 2000 lower than at any time in the period from 1988 through 2000.

Net debt-to-GDP ratios in the period 1988 through 2000 are shown in figure 2 for the study countries and the United States. Norway's and Sweden's large asset holdings make their net debt substantially lower than their gross debt. Since Norway's assets are larger than its debt, it had negative net debt-to-GDP ratios in this period. After Norway, Sweden had the lowest net debt-to-GDP ratio (2 percent in 2000), although its gross debt-to-GDP ratio (61.2 percent in 2000) was the highest among the study countries and the United States.

Figure 2: Net Debt-to-GDP Ratios, 1988 Through 2000



Note: Net debt measures and source documents are listed in the footnote.¹¹

Some Countries Used Fiscal Targets

As noted in our study of the fiscal policy experiences of study nations, debt and budget targets were used as fiscal goals in some countries. Maintaining government debt at prudent or stable levels is a fiscal goal pursued in most of the countries we studied. Debt objectives can be defined in both nominal amounts and relative terms. Gross debt as a

¹¹United States – “federal debt held by the public,” CBO, *The Budget and Economic Outlook FY 2002-2011*, and “financial assets,” U.S. Treasury, *Financial Report of the United States Government*; United Kingdom – “public sector net debt,” HM Treasury, *Budget 2001*; Australia – “commonwealth general government net debt,” *Commonwealth Budget 2001-2002*; New Zealand – “net Crown debt” in New Zealand’s *2001 Economic and Fiscal Update*; Norway – “general government net financial liabilities,” *OECD Economic Outlook*, December 2000; and Sweden – “general government net financial liabilities,” *OECD Economic Outlook*, December 2000.

percentage of GDP compares debt to the size of the economy. Governments measure the extent to which they have accumulated financial assets by reviewing goals they have set for “net debt”—which is defined as gross debt minus financial assets. (See table 2.)

Table 2: Fiscal Targets Used in Study Countries

Country	Fiscal targets	Notes
Australia	Reduce net debt, with a projected negative net debt in fiscal year 2004-2005, while maintaining liquidity in benchmark securities.	
New Zealand	Maintain relatively stable long-term targets for net and gross debt below 20 percent and 30 percent of GDP, respectively, on average over the economic cycle.	Gross debt would increase in nominal terms from 2001 through 2005 to finance financial and physical assets.
Norway	Keep revenue and expenditure at sustainable levels consistent with stable prices and long-term fiscal sustainability, which is the primary fiscal objective.	Short-term fluctuations in oil prices should not affect economic policy.
Sweden	Maintain 2 percent of GDP budget surplus on average over an economic cycle.	Sweden has a nominal ceiling for central government expenditures for 3 years ahead.
United Kingdom	Maintain net debt at a sustainable level, below 40 percent of GDP.	The ratio of net debt to GDP was forecasted to fall to about 34 percent of GDP in fiscal year 2001-2002, and remain at about that level for the next 4 years.

Sources: Data from study countries obtained in early September 2001.

The amount of general government net debt in Australia has fallen consistently since the mid-1990s, from a peak of almost 19 percent of GDP in fiscal year 1995-1996 to an expected 5.4 percent in fiscal year 2001-2002. Using the policy settings in the fiscal year 2000-2001 budget, net debt could be eliminated in fiscal year 2004-2005. New Zealand’s *2001 Economic and Fiscal Update* projects net debt-to-GDP levels of from 15.8 percent to 18 percent from 2001 through 2005.

In Europe, the Maastricht Treaty provides for a target ratio of gross general government debt to GDP at market prices of 60 percent and budget deficits of not more than 3 percent of GDP at market prices. Sweden and the United Kingdom subsequently adopted fiscal policies and debt targets that would enable them to achieve and maintain these levels.

Sweden's fiscal policy anchor is a budget surplus of 2 percent of GDP on average over an economic cycle. This fiscal policy goal was adopted to reduce general government debt in preparation for demographic changes and to allow Sweden to achieve and maintain Maastricht's convergence criteria. The United Kingdom's fiscal targets,¹² adopted in 1998, included a sustainable investment rule that called for holding public sector net debt as a percentage of national income at a "stable and prudent" level over the economic cycle. However, the United Kingdom achieved a net debt-to-GDP ratio of 31.6 percent in 2001, below the level of 40 percent of GDP referenced in 1998. The 2001 budget projects a steady ratio around 30 percent in the next 5 years.

Study Countries Decided to Maintain Government Debt

While in budget surplus, each of these five nations also decided, for reasons particular to its own political and economic considerations, to maintain some level of government debt and the ability to issue debt by retaining a presence in the capital market. The reasons given for keeping some government debt include

- preparing for the possibility that the government may need to borrow again (New Zealand);
- strengthening the domestic capital market (Australia, New Zealand, and Norway); and
- providing a secure, long-term investment vehicle for pension and insurance funds (United Kingdom).

Both structural differences in domestic capital markets and the relative size of government debt in the world and domestic bond markets affect options available to government decisionmakers and debt managers. For example, some nations where government bonds comprise a large share of bond markets found it important to maintain some level of debt to ensure continued viability of a market for government bonds. Table 3 shows the relative market shares of government securities by country.

¹²The United Kingdom's fiscal targets are described in the Finance Act 1998 and the Code for Fiscal Stability 1998.

Table 3: Relative Market Share of Government Securities by Country

Country	Share of each country's government bonds in world bond market	Share of central government bonds in each country's bond market
United States	7.34%	15.0%
Australia	0.21%	35.5%
New Zealand	0.04%	61.9%
Norway	0.05%	35.0%
Sweden	0.24%	49.0%
United Kingdom	1.33%	39.1%

Note: World bond market includes government, corporate, foreign, and Eurobond issuers.

Source: Merrill Lynch, *Size and Structure of the World Bond Market: 2001*, April 2001 (data as of December 31, 2000).

The experience of moving between budget surpluses and deficits has influenced current debt management policy and practices in the countries we visited. Government officials told us their current debt management is based on the assumption that borrowing needs may increase in the future.

Countries Have Similar Debt Management Objectives

Although the five study countries and the United States do not have identical objectives in managing their sovereign debt, debt management objectives in all of these countries generally fall into four categories:

- ensuring that the government's financing needs are met,
- minimizing the cost of financing,
- supporting domestic capital markets, and
- keeping risk at an acceptable level.

Debt management objectives may remain the same regardless of whether a government's budget is in deficit or surplus. However, debt managers may use different strategies to pursue these goals when budget surpluses allow lower debt levels than when deficits cause debt to increase. Additionally, while debt managers continually make decisions on the composition of government debt, balancing the objectives becomes more challenging when the amount of debt outstanding is being reduced. This is because the objectives, while interrelated, are not always entirely compatible.

Ensuring that the government's financing needs are met is a critical objective and achieving it is the result of successful debt and cash management. The cycles for issuing bills, notes, and bonds are determined

largely by the government's cash management needs. Short, variable term bills can be issued as needed to cover low points in available cash.

Minimizing the cost of borrowing usually is viewed as a medium- to long-term objective. Debt management offices use different approaches toward achieving lowest long-term cost. For example, debt management offices like those in our study have decided to maintain regular, predictable operations and to maintain broad and deep markets, while others with small operations may time their actions to take advantage of market conditions. Taking advantage of market conditions can include issuing a particular type of security only when conditions (such as price) are advantageous to the government.

Supporting domestic markets is important because efficient, liquid—defined as broad and deep—markets that address investor demands also contribute to achieving the first two objectives. The U.S. Treasury advances its goal of efficient markets by issuing debt with various maturities and in sufficient amounts to appeal to the broadest range of investors. One way the United Kingdom's Debt Management Office has supported its domestic market is by issuing relatively more long-term debt to meet strong and increased demand caused in part by regulatory and tax factors and because the demographic profile is becoming older and pension funds are demanding more nominal bonds.¹³ According to the United Kingdom's Treasury, meeting this demand will benefit both the government and investors. Insurance companies and pension funds acquire the relatively longer-term government securities to meet their portfolio needs, and the government may get cheaper financing because it is issuing where demand is high. However, this government strategy means that there is less relatively new debt in the shorter maturity ranges sought by other capital market participants. Sweden's National Debt Office also helped to strengthen the domestic capital market by its strategy of issuing securities in kronor and executing a swap agreement wherein the government pays interest in foreign currency, and receives payment in kronor equal to the cash flow for a krona-denominated bond. Thus, Sweden gets a lower borrowing cost than if it sold bonds denominated in a foreign currency and this results in improved liquidity in the domestic

¹³Institutional and regulatory factors included the "Minimum Funding Requirements" that created incentives for pension funds to hold long-dated government securities. The Government has announced that these Requirements will be abolished. Other factors include the "Advance Corporation Tax," abolished in April 1999, and the dividend tax credit, abolished in the 1997 budget.

government securities market. Debt management offices in the countries we studied believed it was important to consult with market participants about such issues as market conditions and investor demand.

Keeping risks at an acceptable level is key to success in each of the other objectives. Debt management offices encounter and manage the following types of risk:

- Funding risk is the possibility that a debt management office would not be able to access markets or raise funds at an acceptable cost. For example, rates may be unacceptably high when the government needs to issue debt to cover a budget deficit.
- Liquidity risk is the possibility that market conditions might shift in such a way as to not allow for quick or cost-effective liquidation of securities or positions. For example, the government may face liquidity risk when it repurchases outstanding marketable debt prior to maturity if it causes a substantial change in prices.
- Market risk is the possibility that, once debt has been issued, adverse changes in interest rates or foreign currency exchange rates could cause either debt service costs to increase directly or the opportunity to reduce debt service costs to be missed. For example, the funding cost may be higher on new debt than on maturing debt.
- Portfolio concentration risk is created when a portfolio is unduly affected by one specific instrument, individual transaction, industry, or country.
- Operational risk includes, among other things, the possibility of errors in transactions, failures of internal controls, breaches of legal requirements, and disruption of markets from external events such as natural disasters.
- Debt management offices that use swaps in managing their debt also face credit risk. Credit risk is the possible default or lowered credit rating of a financial institution participating in a swap operation with the government.

Debt managers' assessments of the risks inherent in each of the debt management tools are one factor used when deciding among several tools that could address the same objective. For example, debt managers could use debt buybacks coupled with greater new issuance, switch auctions,

and debt exchanges to change the average maturity/duration¹⁴ of outstanding debt, as is done in the United Kingdom. These tools, explained later in more detail, may affect market risk or liquidity risk differently. The relative market share of a government's securities in the world and domestic capital markets is one factor that affects the amount of risk associated with particular debt management tools. For example, United States government securities represent a smaller share of the domestic capital market than do the securities of the study nations. The relatively deep, liquid private capital market in the United States accounts in part for the statement of a Treasury official that the market could adjust to declines in the supply of Treasury securities in times of budget surpluses. However, as we noted in an earlier report, the changes may not be either seamless or without cost.

Debt Management Approaches Differ

Debt management in some study countries is driven by policy decisions on debt targets and portfolio benchmarks. Further, differences in the size and depth of capital markets affect options available to debt managers.

Many of the study nations set formal debt maturity or duration targets to assist debt managers in managing risk. For example, during periods of budget surplus, governments generally reduce debt or issue less debt than in deficit periods. Thus, the maturity profile or the average duration is determined more by the character of outstanding debt than the composition of new issues. These maturity profile issues are important because debt maturity can have a significant influence on the government's cost of financing as it affects interest payments and market liquidity. While the United States does not have formal debt targets, operationally the Treasury considers objectives similar to those of the study countries. (See table 4.)

¹⁴Average maturity and average duration indicate the level of market and funding risk a government might face. Modified duration of outstanding debt is the percentage change in the debt's market value arising from a 1-percent change in the nominal interest rate. Two study nations use duration targets and two do not use any targets. A Treasury official noted that the United States does not have a formal target. However, it monitors average maturity rather than using duration because the United States does not match assets and liabilities.

Table 4: Debt Targets of Study Countries

Country	Debt maturity or duration targets— domestic currency nominal debt	Notes
United States	No formal target. Operationally, the United States spreads issuance over the yield curve and maintains a limited number of liquid benchmarks.	The Treasury monitors the average length of marketable debt, and Treasury officials said that buybacks have prevented its lengthening by about 2 to 3 months. The average length of marketable debt was 5.9 years as of September 30, 2001.
Australia	A modified debt duration range of 3 to 3.5 years for domestic debt and 1 to 1.5 years for United States dollar-denominated debt.	
New Zealand	Spread issuance over yield curve, up to 12 years.	Debt maturity profile is kept relatively smooth to reduce funding and market risks.
Norway	Build up and maintain a limited number of liquid benchmark bonds with maturities up to 10 to 11 years.	Borrowing is done to provide funds for net lending, equity investments, debt amortization, and central bank monetary operations.
Sweden	3.5 years +/- 0.5 years duration. No more than 25 percent of the central government debt will mature within 1 year.	The duration of the combined domestic and foreign currency debt is shorter—2.7 years, +/- 0.3 years.
United Kingdom	No formal target. Operationally, issuance has, in the recent past, been biased toward long maturity bonds in response to strong demand for these bonds from investors. Issuance in fiscal year 2000-2001 was 65 percent long-term fixed bonds and 35 percent index-linked bonds.	

Sources: Information supplied by study countries.

A flatter debt maturity profile, with approximately equal amounts of debt in benchmark issues across the maturity curve, helps to reduce both funding and market rate risks. For example, as a result of concentrating debt issuance in fewer benchmark securities, New Zealand's debt profile in August 2001 was approximately horizontal with eight benchmark securities (out of 10 total debt issues) of roughly similar size.

In the United States, approximately 50 percent of total outstanding marketable debt will mature in 2 years or less. Such a profile may present countries with less-developed capital markets or less demand for government securities than in the United States with significant funding

risk.¹⁵ The United States is less likely to incur this funding risk because the United States' government bond market is the largest in the world and its securities enjoy high demand.

Four of the countries we studied—Australia, New Zealand, Norway, and Sweden—develop hypothetical “benchmark portfolios” that target the composition of their debt portfolios and the nature of portfolio exposures (or market risks) that are most efficient in the long term. In Sweden, the Ministry of Finance works with the central bank and debt management office to develop these targets. The Australian Office of Financial Management develops its benchmark portfolio with the assistance of external portfolio management consultants. Once the benchmarks are set, debt managers design strategies to achieve or maintain this portfolio structure over the long term. Oversight and accountability for debt management offices with portfolio benchmarks can be more direct and transparent since they may report at year-end on their portfolios and how they differ from the targets. Some governments publish annual reports with assessments of debt management. For example, in Sweden the government decides on such portfolio benchmarks as the average duration of the nominal krona-denominated debt, and the amount of inflation-indexed and foreign currency-denominated debt. The government's decisions and supporting analysis as well as the Swedish National Debt Office's proposals and central bank's comments are published annually. Swedish law requires the government to evaluate the management of central government debt in a written communication to the parliament. Evaluation is both quantitative (differences in the absolute costs compared with the government's guidelines) and qualitative (day-to-day management of the debt, including market maintenance efforts).

The countries' disparate experiences significantly influence the implementation of debt management—that is, their choices of debt management tools. Market share, market structure, and the preferences of capital market participants can shape the choices available to debt managers. Differences in balancing cost and risk also shape debt management choices. Further, the size and timing of an actual or projected budget deficit or surplus can affect choices about whether and how to hold financial assets. Some examples of factors shaping debt management abroad follow.

¹⁵Funding risk presents the possibility that there may not be sufficient market demand for government securities or the government could not sell them at an acceptable price.

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- Australia does not need to issue debt in foreign currencies because of its deep domestic government securities market. However, it has taken on foreign currency exposure because this can provide long-term cost and risk advantages.
 - In contrast, in New Zealand the focus of debt management from 1994 to the present has been to reduce its large volume of foreign-currency denominated debt and thus eliminate net foreign currency risk.
 - The Norwegian government returned to surplus in 1996 on the strength of surging oil revenues, economic improvements, and fiscal restraint. It then was faced with the decision whether to maintain its domestic government securities market and, if so, how to invest these receipts in assets.
 - In Sweden, debt managers had to coordinate debt issuance and asset swaps as the government undertook concurrent reform of the national pension system. The AP funds (national pension scheme) were restructured and SEK90 billion was transferred to the central government budget during fiscal year 1999-2000 and SEK155 billion in 2001. The government will use these receipts to reduce debt.
 - The United Kingdom has a strong institutional demand for long-term government securities that significantly influences debt managers' choices.

Some Debt Management Tools Are Common to All Study Countries and the United States, but Implementation Varies

The five countries in our study generally used similar debt management tools to reduce the level of outstanding debt during budget surpluses. Some countries reduced issuance of new debt securities. The study countries employed similar tools to improve liquidity and concentrate new debt into fewer, larger benchmark issues. These include eliminating certain maturities, changing the frequency of auctions of certain debt instruments, and adding new debt to existing issues (called reopening) rather than creating new issues. At the same time, some study countries also reconsidered issuance of inflation-linked securities and increased issuance of short-term bills with varying maturities. Further, all study countries bought back debt before it matured. The United States also used these tools in its debt management. (See table 5.)

Table 5: Debt Management Tools by Country

Tool	United States	Australia	New Zealand	Norway	Sweden	United Kingdom
Reduce net issuance	X	X			X	X
Concentrate issuance into benchmarks	X	X	X	X	X	X
Eliminate certain maturities	X	X	X	X	X	X
Reopen issues	X	X	X	X	X	X
Buy back outstanding debt before maturity through reverse auctions	X	X	X		X	X
Reduce or eliminate issuance of inflation-linked securities	X	X	X			X
Increase issuance of short-term bills with varying maturities	X				X	
Offer standing repurchase of debt nearing maturity offered by investors		X	X			X
Sell or buy securities between auctions						
Taps/reverse taps		X		X	X	X
Open window		X	X	X	X	X
Use swaps to hedge domestic interest rate risk		X	X			
Use swaps to hedge currency risk		X	X			X
Use swaps to increase issuance in domestic currency while creating foreign currency debt		X	X		X	
Use debt exchanges			X		X	X
Use switch auctions						X

Sources: GAO interviews with government officials in study countries and publications from study nations and the United States.

Concentration of New and Outstanding Debt Into Fewer Issues

As budget surpluses resulted in lower debt levels, all five study countries restructured their debt portfolios to better achieve debt management objectives. All of the countries in our study—as well as the United States—have taken steps to concentrate debt issuance into fewer, larger benchmark issues. These larger issues allow governments to capture a liquidity premium¹⁶ in the market that reduces their costs of financing.

When governments run budget deficits and have large borrowing needs, debt managers may be able to issue new debt in issues large enough to be liquid (or efficient in the market). However, when governments with budget surpluses reduce borrowing, new issues become smaller and less

¹⁶A liquidity premium is the incremental price market participants are willing to pay for securities that are part of large issues that can be easily traded.

liquid. Continuing with many small issues is less efficient, and the governments' financing costs may rise as the bond markets seek to offset this lower liquidity. Therefore, as debt levels have fallen, debt managers have concentrated new issuance into fewer, larger, benchmark issues. The market rewards this increased liquidity by paying premiums that reduce the governments' costs of borrowing.

The study countries all have reduced the number of new issues and used debt management tools to concentrate borrowing into fewer, more liquid benchmarks. The five nations in our study—and the United States—have from 3 to 12 benchmark issues that range from 1 to 30 years in maturity. Recently, only the United Kingdom and the United States have had benchmark bonds that mature in 30 years. The U.S. Treasury announced on October 31, 2001, that it was suspending issuance of the 30-year nominal and inflation-indexed bonds. The announcement acknowledged that market interest and actions have shifted from the 30-year bond to the 10-year note. The benchmark maturities in other countries generally range from 1 to 15 years. (See table 6.)

Table 6: Benchmark Securities in Selected Countries as of August 2001

Country	Number of nominal coupon benchmarks and terms to maturity	Comments
United States	Number: 3 Terms: 2, 5, and 10 years	The U.S. Treasury announced on October 31, 2001, that it was suspending issuance of the 30-year nominal bond.
Australia	Number: 12 Term: 13 years	
New Zealand	Number: 8 Terms: almost 5 years to almost 12 years	The 5-year bond, original issue NZD\$150 million and February 2005 maturity was reopened seven times and increased to NZD\$1,272 million at end of June 2001. The 12-year bond, original issue NZD\$175 million and November 2011 maturity was reopened 20 times and increased to NZD\$2,871 million at end of May 2001.
Norway	Number: 5 Terms: 1 to 11 years	Norway normally issues a new domestic bond approximately every 2 years that matures after 11 years. Bonds with remaining maturity less than 1 year are no longer regarded as benchmarks.
Sweden	Number: 12 Terms: 2 to 15 years	These securities are offered in several tranches during the whole term of the bonds, until they lose their benchmark status 1 year before redemption.
United Kingdom	Number: 3 Terms: 5, 10, and 30 years	Nominal issuance in recent years has been solely 30-year gilts responding to strong institutional demand.

Sources: Data from study countries and the U.S. Department of the Treasury and interviews with country officials.

In the study countries, creating new issues each time the government goes to the debt market may result in small, less liquid issues. Consequently, some of these countries establish new issues only when needed to provide borrowing across the yield curve. Because these new issues generally are too small to serve as benchmarks when they are issued, debt managers then add to them when the government needs to borrow again in the future until they reach benchmark status. This practice, called reopening, is used in all study countries to increase the size of outstanding benchmark issues. By contrast, while U.S. Treasury securities have been sufficient in size to be considered benchmarks when issued, the U.S. Treasury has implemented a program of regular reopenings to maintain their size.

All study countries and the United States implemented debt management strategies to increase concentration of new issuance into fewer, larger issues. However, the number of outstanding issues differs markedly and reflects historical differences. Benchmark issues represent a much larger proportion of total outstanding issues in Australia, New Zealand, Norway, and Sweden than they do in the United States and the United Kingdom. In New Zealand and Norway all government borrowing is concentrated into benchmark issues. According to an official in the United States, many of their fixed-coupon nominal issues had benchmark size when they were issued and some issues still retain benchmark size although they are not the most currently traded issues. Other study countries had smaller original issues and reopened the issues to create benchmarks. (See table 7.)

Table 7: Number of Outstanding Government Bond Issues as of August 2001

Country	Number of outstanding government fixed-coupon nominal issues	Of which: number of benchmarks
United States	148	3
Australia	19	12
New Zealand	8	8
Norway	5	5
Sweden	14	12
United Kingdom	51	3

Sources: Government publications and interviews with and data provided by government officials.

Another reason the United States and the United Kingdom have more outstanding issues is that they are the only two countries we studied that have recently issued nominal debt maturing in 30 years.¹⁷ Issuing such long-term debt over several decades results in a large number of individual issues outstanding at any given time. In addition, some of the study countries began to concentrate outstanding debt into benchmark securities earlier than the United States, and these study countries also use a wider range of tools to accomplish this goal.

Three of the five study countries have reduced or eliminated issuance of inflation-linked debt. These securities are a valuable tool for debt managers because they expand the range of savings opportunities in the

¹⁷The U.S. Treasury announced on October 31, 2001, that it was suspending issuance of the 30-year nominal and inflation-indexed bonds.

market, may produce cost savings for the government, and enhance the credibility and conduct of monetary policy. Inflation-linked securities may provide the government with lower-cost funding because investors receive lower interest rates in return for protection against inflation. In return for potentially lower costs, the government assumes the risk of unexpected price increases and the government's incentives to inflate are reduced. Inflation-linked securities can be useful to policymakers interested in damping inflation in the future. Inflation-linked securities have some negative attributes as well—low participation and lower liquidity. These qualities can decrease market efficiency and can increase the cost to the government as the market charges an illiquidity premium. Of the five countries we visited, Australia, Sweden, and the United Kingdom actively issue inflation-linked securities, as does the United States. A Norwegian official told us that, given the small size of Norway's debt, diversifying into inflation-linked securities would reduce the amount of nominal benchmark bonds (which is close to the level needed to maintain acceptable liquidity in each bond). A New Zealand official told us that New Zealand stopped issuing inflation-linked securities because of lack of investor interest and the cost of issuance relative to other alternatives.

Although the nations in our study were moving toward generally similar debt portfolios, we would not expect to see convergence into identical portfolio structures. A recent report from the World Bank stressed that there is no single portfolio design appropriate for all countries.¹⁸ Debt portfolios must respond to national priorities and market conditions.

Debt Buybacks Are a Flexible Tool

By selectively reducing the outstanding amount of particular securities, debt buybacks are a powerful tool to manage liquidity or the average maturity of outstanding debt. Debt buybacks can be used as an end in themselves—to reduce outstanding debt—or as a way to allow the debt management office to issue more new debt without increasing overall debt levels. Thus, debt buybacks can be used in periods of budget deficits as well as budget surpluses. Debt buybacks can be implemented in a number of ways. They can be used alone or in tandem with new debt issuance. They also can be completed with different degrees of transparency, regularity, and access by investors. Every study nation has used buybacks

¹⁸*Sound Practice in Sovereign Debt Management*, The World Bank, Financial Products and Services Department, July 12, 2000.

at some point in the debt reduction process, although they have designed and managed their programs differently from the United States.

The number of outstanding issues that are not benchmarks is one indicator of the “buyback potential” in each country. As shown earlier in table 7, the United States has a larger number of nominal fixed-coupon government bond issues than any of the five study countries, with 145 that are not benchmark issues. The portfolio structures in the United States and the United Kingdom show significantly more potential for buybacks than other study countries when using this measure.

The United States Buyback Program

While all study nations have done debt buybacks, they generally use them differently from the United States. The United States has used a program of ongoing, regularly scheduled reverse auctions to buy back debt. In a reverse auction, market participants submit offers and the government accepts the most competitive offers. The study countries—except Norway—have done reverse auction buybacks, but they are not a routine part of debt management abroad. Recently some study nations used reverse auctions episodically—to reduce debt levels using one-time large receipts from the sale of government assets. In contrast, the United States holds reverse auctions twice a month and uses them both to reduce debt levels and to manage average maturity and market liquidity.

In the late 1990s, the U.S. Treasury had to devise strategies for managing large, continuing surpluses. If U.S. debt managers had used cash surpluses to reduce debt rollover without taking other steps, they would have faced large changes in average maturity and liquidity that could have increased the government’s cost of financing. Because a debt buyback program of regular reverse auctions can operationally handle relatively large volumes and because the U.S. Treasury values regularity and predictability, the Treasury chose to implement a debt buyback program of regular reverse auctions with advance announcements of the size and targeted issues.

In March 2000, the Treasury held the first in a series of reverse auctions to repurchase outstanding debt before it matured. In May 2000, the United States implemented a program of regularly scheduled reverse auctions. The dates and amounts of the transactions and the maturity ranges being targeted for repurchase are announced in advance. In calendar year 2000, the Treasury completed 20 reverse auctions and bought back \$30 billion (par value) in bonds. The Treasury’s buybacks through the end of December 2000 targeted bonds maturing from 2010 to 2027. In calendar year 2001, the Treasury has announced quarterly buyback amounts for its reverse auctions. The Treasury bought back \$25 billion (par value) in

bonds from January through August 2001. Because reverse auctions were suspended for the month of September, the calendar year 2001 buyback level is projected to be \$34 billion (par value). While this is lower than the earlier projection of \$37 billion for 2001, it is still \$4 billion higher than in 2000. On October 31, 2001, the Treasury announced that regular buybacks would continue through calendar year 2001. However, an official noted that there will be no buybacks in January 2002 and that in February 2002 they will begin quarterly announcements as to whether the Treasury will do buybacks over the next 3-month period and also the size of any planned operations. Decisions will be based on three factors: (1) projections of the federal government's annual unified budget surplus or deficit, (2) projections of the cash position for the 3-month period, and (3) analysis of how best to minimize borrowing costs over time.

When the budget was in surplus, the Treasury bought back longer maturity, off-the-run securities. As a result, the Treasury was able to avoid lengthening the average maturity by about 2 months that would have occurred from debt redemptions without a buyback program. The buybacks also enabled the Treasury to issue new debt in liquid benchmarks favored by the market.

Debt Repurchases by Study Nations

Buybacks have been a routine part of debt management in most of the study countries. However, unlike the United States, the study nations generally also used tools other than debt buybacks to manage liquidity and average maturity/duration of outstanding debt.

The study nations have used a variety of buyback tools and did not rely as heavily on reverse auctions as has the United States. Reverse auctions were used by some study countries in the 1980s primarily to buy back debt denominated in foreign currencies. In recent years, reverse auctions have been used episodically, generally in connection with large, one-time revenues such as those from auctions of the communications spectrum or privatization of a government enterprise. Debt buybacks abroad are not always announced in advance, are not always open to all market participants, or are not always reported until after they have been concluded.

Other countries' experience illustrates that buybacks are an important tool but one that potentially can be costly. These nations have used several strategies to mitigate this potentially increased cost. They include the episodic rather than routine use of reverse auctions and the use of reverse auctions in combination with other tools, such as open market repurchases, to buy back debt.

Officials in Australia and Sweden reported that their experiences showed that the cost of a debt buyback was related in part to how it was implemented. Swedish officials told us that clear market communication is essential, and Australian officials said that buying back debt through means other than a reverse auction may lower costs to the government.

Australian officials told us they undertook reverse auctions in fiscal year 1988-1989. However, officials told us that these were not very successful operations. In contrast, Australian government officials and market analysts told us that the costs of buybacks done recently in Australia were low and explained this in part by the way the repurchases are made.

The RBA has conducted bond repurchases on behalf of the AOFM for several years. From 1996 through 2000, the RBA repurchased A\$21.3 billion in outstanding bonds (total face value) prior to maturity. These repurchases have been carried out both through the central bank's open market operations and through direct purchases in the secondary market. An RBA official said that, although the RBA offsets these bond repurchases when calculating needed monetary policy actions, the market actions are taken at different times to emphasize their different purposes. The RBA has discretion as to the timing and price of each bond repurchase, subject to guidance set by the AOFM. Purchases are made without prior announcement but are reported by the AOFM at the end of the month.¹⁹ An RBA official said that the success of these operations is a function in part of the liquidity of the bond and the level of information about the operations themselves. Australian officials regard this approach as one part of a long-term strategy to consolidate government debt into fewer maturities and have been discussing other buyback strategies for future implementation.

Unexpected changes in key information about the amount of debt repurchases and a compressed time schedule marred Sweden's buyback operations in 2000. Sweden's National Debt Office (SNDO) completed 14 debt repurchases of three bond issues from May 23, 2000 through June 21, 2000. The total face value of the repurchased bonds was SEK31.2 billion (including noncompetitive offers). The buybacks were used to offset the revenues from the privatization of the government-controlled

¹⁹In contrast, the U.S. Treasury established transparent debt buybacks in which primary bond dealers know in advance the total amount the Treasury is committed to spend in each operation and the range of securities eligible for repurchase.

telecommunications group, Telia, and to allow the government to continue to issue new securities in 2000. When the debt management office announced a buyback of SEK55 billion, the prices of debt increased. One week later, when revenues from the Telia sale were less than expected and the debt management office reduced the buyback total, bond prices rose again. According to the debt office's annual report, these buybacks triggered a change in bond prices that implied that the government paid from SEK250 million to SEK400 million more for the securities. Swedish government and market representatives stated that clear communication with the market was essential to a good outcome. The only choices available to SNDO officials at the time were to use the receipts to buy back debt or to place the receipts in the domestic banking system. In hindsight, SNDO officials said they would have preferred to have authority to place the receipts in other government securities for 2 to 3 months, but to do this would have required a change in the law.

In fiscal year 2000-2001, the United Kingdom's Debt Management Office planned to buy back debt worth \$5.7 billion from the market using reverse auctions supplemented by "open window" purchases from investors with primary dealers acting as intermediaries. Initial plans were to buy back a total of \$3.5 billion of which at least \$2.5 billion was to be done using reverse auctions. They devised this strategy to guard against the risk that buybacks might become progressively more expensive as reverse auctions continued.

The Debt Management Office conducted six reverse auctions during fiscal year 2000-2001, buying back \$4.1 billion (cash) from six of seven offered bond issues—three bond issues in the 2003 through 2005 maturity range and three issues in the 2006 through 2008 maturity range. This was an increase from the originally planned level because the financial surplus increased through the year. Although they were concerned that the buybacks would get expensive, officials reported that this did not happen. In June 2000, debt managers added a small number of additional bonds to those for which it was prepared to bid at market prices and bought back \$1.6 billion in outstanding debt using an "open window." There are no initial plans to continue the reverse auction program in fiscal year 2001-2002, although it remains a possibility if the financing requirement falls. The arrangements for open window repurchases remain in force.

Some analysts in the United States and abroad believe that buybacks could become more costly as the volume of debt securities dwindles, and governments may have to pay higher prices to entice "buy and hold" investors to sell. If true, this would reduce the long-term potential of using

debt buybacks for debt reduction. So far, according to Goldman Sachs,²⁰ the Treasury has repurchased debt at near the market prices at the time the offers were submitted.

Other Countries Have Used Debt Management Tools Not Currently Used by the United States

Some debt management tools used regularly in other nations may hold promise for the United States in times of budget surpluses or deficits. Other tools may be difficult to implement in ways that are compatible with the U.S. Treasury's position of providing equal access for transactions.

All of the study countries have at some time provided an opportunity for investors to offer government securities—regardless of time to maturity—to the government that then has the option to repurchase them at prevailing market prices. When this type of debt buyback is done, the government is said to have an open window. Bondholders would be interested in this offer if, because of market conditions or other reasons, they wanted to use their funds differently. New Zealand used this approach in the early 1990s to consolidate tranches of outstanding bond issues into benchmarks. A variation of this approach is found in Australia, New Zealand, the United Kingdom, and Sweden where investors may offer the government the opportunity to repurchase any securities at market prices when they near maturity. These programs act as both debt management and cash management tools—reducing outstanding debt and refinancing risk and smoothing cash flows. As with a reverse auction program, the government could choose which issues to repurchase. While the amount of debt repurchased may be lower in an open window program, these programs may provide a lower cost buyback because the government can choose to buy when it believes market prices are advantageous. Open window repurchases likely can be done more frequently than reverse auctions and may have lower administrative costs. Open window programs are used to complement reverse auction buybacks in Australia, New Zealand, Sweden, and the United Kingdom.

Debt exchanges are used in three of the five study countries to promote liquidity of benchmark securities by exchanging outstanding nonbenchmark securities for newly issued, more liquid benchmark bonds. Exchange offers are opportunities provided to bondholders to convert one debt security into another at a ratio set by the debt management office.

²⁰Goldman Sachs' *Fixed Income Weekly Market Outlook: United States*, August 17, 2001, p. 5.

Exchange offers can be used in conjunction with an open window or be made available periodically. Some have been kept open for 3 weeks from the date of the initial announcement of the ratio to try to attract a wide pool of participants. Exchange offers are voluntary and bondholders are free to retain their existing debt security, although this issue is likely to become less liquid and lose some of its value if the majority of other bondholders choose to convert their holdings. For example, to enhance the liquidity of its 5-year benchmark, the United Kingdom's Debt Management Office in July 1998 exchanged \$2.9 billion of the 11 ¾ percent Treasury bond of 2003-07 into \$3.4 billion of the 6 ½ percent Treasury bond of 2003. Swedish debt managers have regularly exchanged outstanding bonds within 1 year of maturity for Treasury bills to maintain liquidity at the short end of the yield curve. The U.S. Treasury now is studying the advisability and feasibility of debt exchanges.²¹

Switch auctions are used in the United Kingdom to build liquidity in benchmark issues when debt managers want to obtain an amount of a debt issue that is too large to be considered for a bond exchange offer. Switch auctions are those in which the debt management office offers to buy a certain amount of outstanding nonbenchmark securities in exchange for the further issue of an amount of benchmark securities, with the exchange ratio to be determined by the accepted offers. Switch auctions are similar to debt exchanges in that older, nonbenchmark bonds are converted into benchmark securities. Other than volume, the key difference is that in a debt exchange the government directly sets the exchange ratio and in a switch auction it does so indirectly by accepting or rejecting market offers. The United Kingdom debt managers use switch auctions to accelerate the creation of new, liquid benchmark securities. Investors choose to sell their securities to the government because they have alternate uses for their capital. In three operations in fiscal year 2000-2001, the Debt Management Office offered to allow market makers to switch some existing off-the-run issues into new benchmark issues. In these operations, the Debt Management Office purchased older 8-percent Treasury securities maturing in 2015 and reopened a newer 4.25-percent Treasury security maturing in 2032. The three switch auctions added \$6.8 billion to the original issue, more than doubling its size in 1 year. An AOFM official told us that Australia may use switch auctions to

²¹The U.S. Treasury used "advance refundings" in the 1960s to exchange new issues for outstanding debt.

consolidate debt into fewer benchmarks. Switch auctions may provide another tool for the U.S. Treasury to use in managing liquidity.

Some countries continue to hold debt they have bought back without canceling it. For example, the AOFM does not always immediately cancel the securities it repurchases. According to AOFM officials, they have not canceled long-term debt bought back from the RBA. Rather, it is held until the securities mature.

Other tools employed at times by some other nations may be difficult to use in ways that are compatible with the values of transparency, predictability, and equal access. For example, one-on-one offers to sell or buy debt securities at market prices between the debt management office and individual capital market participants (called “taps” or “reverse taps”) are used in the United Kingdom and other study nations. Taps (or sales) have been initiated by the Debt Management Office in the United Kingdom when there is temporary excess demand in a particular security that does not require a large auction. For example, in August 1998, the Debt Management Office tapped £150 million of 4 3/8 percent inflation-linked debt maturing in 2004. The United Kingdom has only tapped nominal bonds once, when in August 1999 the Russian default saw a huge flight to quality. Norway used a reverse tap in 1997 to buy back three bond issues. A Swedish debt manager told us Sweden taps older issues to build liquidity. The United States sells all marketable coupon securities only at regularly scheduled auctions. While taps and reverse taps may be reported after the fact, the operations are less transparent than open market operations, may not provide equal access, and may not represent lowest cost to the government.

The U.S. Treasury does not currently use tools that expose the government to credit risk—for example, debt swaps. While swaps may take a number of forms, they generally involve the government taking a position on future changes in interest rates or the prices of government securities. For example, a government may swap fixed interest rate securities with another party for variable interest rate securities. Debt swaps are used in Australia, New Zealand, Sweden, and the United Kingdom. One outcome of using swaps is that the government assumes additional risk not found with other debt management tools. This credit risk comes from the possibility that the other party may default. The Australian government uses interest rate and foreign currency swaps to achieve desired portfolio exposures. Australia does not borrow in overseas markets, but conducts exchange rate swaps to hedge against the possibility of changes in the value of the Australian dollar against foreign currencies. The Australian

government also swaps out of fixed rate bonds into variable rate bonds on a portfolio basis to hedge against changes in interest rates. Sweden also used swaps as an alternative to direct borrowing in foreign currency. Sweden issues bonds in krona and makes a swap agreement in which the government pays foreign interest and receives payment in krona equal to the payment requirement for krona bonds. This lowers the cost of borrowing and improves liquidity in the domestic government securities market. In fiscal year 1999-2000, the United Kingdom planned to issue £2.5 billion in domestic currency government bonds, investing the proceeds in high-grade foreign currency assets using cross-currency swaps to hedge the currency risk.

Financial Assets Address Different National Needs

Each of the five study countries acquired financial assets during times of budget surpluses. No single model of asset accumulation is followed in all countries. Each country holding assets selected methods and asset types to respond to its need at the time.

The sustainability of budget surpluses is one factor that influences governments' choices to invest in longer-term, perhaps riskier, financial assets. Norway's main goal was to accumulate financial assets to address long-term fiscal and economic concerns resulting primarily from an aging population and declining petroleum revenues. Norway, with its projections of substantial receipts from oil activities in the medium term, has chosen to build an investment portfolio of foreign currency assets, sovereign and international institution debt, and foreign equities. Norway decided to continue to issue debt to maintain a government debt market that would facilitate future borrowing when needed and to strengthen its domestic capital market.

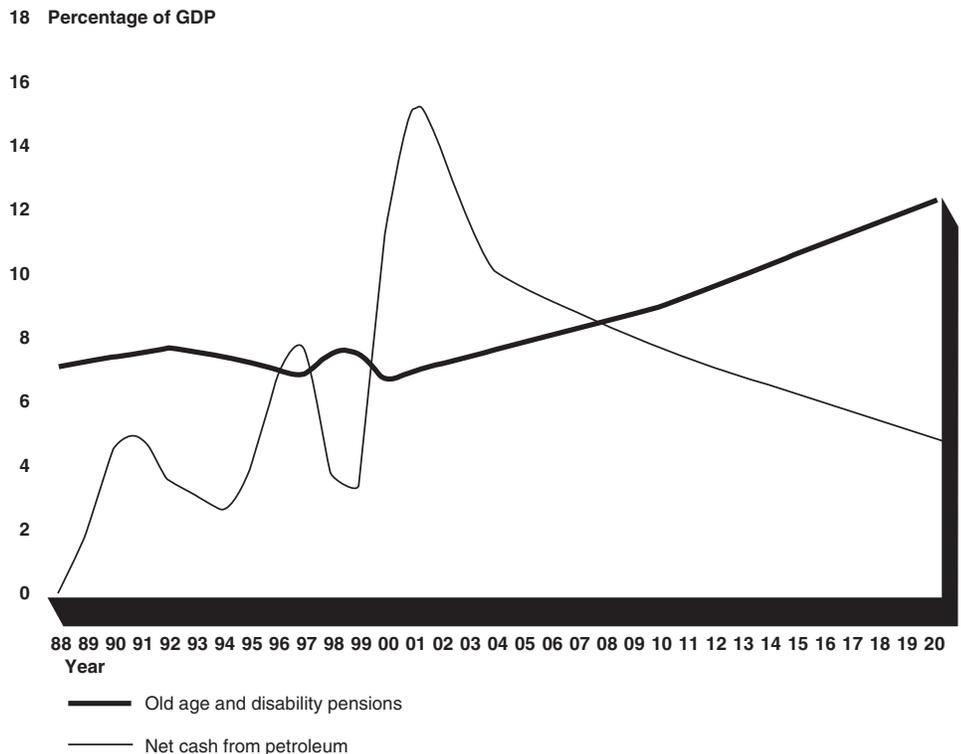
Short-term investments appealed to nations like Australia, Sweden, New Zealand, and the United Kingdom, which have not had large, sustained surpluses. Australia would not expect large, persistent surpluses because its fiscal goal is to balance the budget on average over the economic cycle. Australia has invested its surplus in interest-bearing deposits at the central bank. Short-term increases in cash deposits provide flexibility to policymakers. Australia also has adopted guidelines for longer-term investments. The United Kingdom initially invested the surplus in deposits in the banking system and used the cash to reduce outstanding debt. New Zealand and Sweden have chosen to use surpluses to reduce their borrowing risks by reducing foreign currency-denominated debt. While New Zealand used early budget surpluses to reduce foreign debt, it plans to use the 2001 surplus to invest in physical assets, increase student loans,

and pre-fund for the first time its pay-as-you-go pension fund. Sweden has used budget surpluses to reduce both foreign currency-denominated debt and nominal domestic debt but not inflation-linked bonds. Nations may accumulate financial assets in times of budget deficits as well. These could include foreign currency reserves, pension fund assets, and student loans.

Norway

Addressing long-term national needs has been one of the principal drivers behind Norway's investment decisions on how to use its surpluses. The rapid aging of the population in the 2000 through 2020 period will substantially increase demand for services for the elderly. This fiscal pressure is expected to coincide with a decline in petroleum revenues, as shown in figure 3. In order to ensure that future fiscal resources would be available when oil revenues decline, Norway's central government has saved its budget surplus since 1996 by building a substantial portfolio of foreign financial securities.

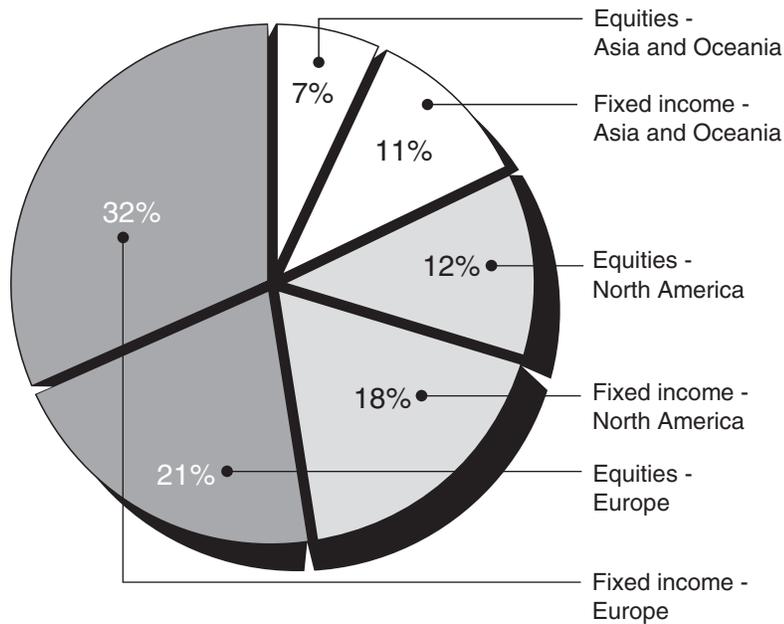
Figure 3: Net Cash Flow From Petroleum Activities and Old Age and Disability Expenditures, 1988 Through 2020



Sources: Statistics Norway and the Ministry of Finance.

At the end of 2000, the Norwegian Government Petroleum Fund had about 60 percent of its investments in fixed income securities (including bank deposits) and 40 percent of its investments in equities. The Fund's investments were distributed geographically as follows: Europe (52.5 percent), North America (29.2 percent), and Asia and Oceania (18.4 percent), as shown in figure 4.

Figure 4: Norway's Government Petroleum Fund Investments as of December 31, 2000, \$386.5 Billion Norwegian Kroner



Note: Percentages add to 101 percent because of rounding.

Source: Norwegian Ministry of Finance.

Norway's strategy of investing in foreign financial assets is designed to help the Fund achieve four objectives. These are (1) serve as a budget buffer on which the government can rely if there is a deficit, (2) avoid pressures in the domestic economy if funds need to be withdrawn because of a substantial budget deficit, (3) spread the Fund's risk over different countries and regions, and (4) help the Fund achieve a higher rate of return than if the money were invested in Norway. Because of substantial oil receipts and specific medium-term goals, Norway chose a more long-term investment strategy than other nations and also accepted more risk in hopes of higher returns. Through the program, an important part of the

petroleum wealth in the North Sea will have been converted to financial assets.

Australia

One-time revenues from the sale of government assets contributed heavily to budget surpluses. As an interim arrangement, the Commonwealth Government in Australia invested these budget surpluses in term deposits at the RBA. Unlike the U.S. Treasury's deposits in Federal Reserve Banks,²² the AOFM's accounts at the RBA earn interest. The interest rate on the RBA term deposits averaged 5.48 percent during fiscal year 1999-2000, which is paid on maturity.²³ These term deposits have helped the government manage its cash balances, as some deposits have matured at times when the government otherwise would have needed to borrow from the market. In effect, these assets reduce gross debt levels without repurchasing outstanding debt. The AOFM manages the risk created by short-term debt and assets in accordance with benchmarks for the portfolio as a whole.

The Australian government has adopted guidelines for long-term financial investments that the Treasurer is authorized to make on behalf of the Commonwealth. The AOFM has the Treasurer's delegation under Section 39(2) of the Financial Management and Accountability Act to make investments, which may include the following financial assets:

- high-quality credit assets of other governments,
- debt securities of Australian state governments,
- certificates of deposit of highly rated banks, and
- debt of international organizations of which Australia is a member.

United Kingdom

The government of the United Kingdom accumulated short-term financial assets with its recent budget surpluses and the one-time revenues from the auction of mobile telephone licenses in April 2000. The cash was temporarily placed in government accounts in the domestic banking system before being invested in money market instruments. The United

²²Although balances in the Federal Reserve Account do not earn an explicit rate of interest, most of the Federal Reserve's earnings are transferred to the Treasury.

²³The AOFM also maintained an operational bank account with the RBA, which paid a money market call rate on the account's daily balance. This account paid 5.12 percent in fiscal year 1999-2000.

Kingdom's National Audit Office reported that the £19.5 billion in spectrum auction receipts was eventually used to reduce outstanding short-term debt (\$11.4 billion), reduce sales of government bonds (\$2.2 billion), and increase foreign currency reserves to offset some government debt denominated in foreign currencies (\$5.9 billion). In effect, the United Kingdom is smoothing the issuance of government debt by continuing to issue in times of surplus and running down its short-term investments as issuance needs increase.

New Zealand

Within New Zealand's overall debt reduction efforts, the government gave priority in 1994 to reducing its foreign currency debt. This objective was achieved in late 1996 by a combination of cash obtained from budget surpluses, sale of government assets, and higher domestic borrowing.

Since 1997 New Zealand has continued to largely eliminate its foreign currency exchange risk by holding foreign currency assets equal to a substantial portion of its foreign currency debt. The Government maintained the liquidity in New Zealand's domestic Government bond market by investing the surplus in financial assets—predominantly student loans—and physical assets. New Zealand's 2001 budget projects surpluses to continue over its forecast period that ends in fiscal year 2004-2005. The New Zealand government has decided to use the surplus to invest in physical assets, refinance private sector housing and health debt, increase student loans, and pre-fund for the first time its pay-as-you-go Superannuation (or pension) Fund.

Sweden

Sweden has chosen to use budget surpluses to reduce its borrowing risks by reducing foreign currency-denominated debt. Sweden has paid down foreign currency debt and nominal domestic debt, but not inflation-linked bonds.

While it is not directly related to a discussion of using budget surpluses to acquire financial assets, the Swedish National Pension Insurance Fund, or AP funds, provides an interesting model for how a government may choose to hold assets. Recent reforms in Sweden's pension system, and resulting asset shifts between the AP funds and the government, have affected debt management. Like the Social Security trust funds in the United States, the AP funds are part of the unified budget total but are considered outside the portion of the budget subject to budget controls. The AP funds hold most of Sweden's financial assets, as shown in table 8.

These assets include cash, government bonds, mortgage bonds, and domestic and international equities.

Table 8: Sweden's Financial Net Position (SEK billion)

	1999	2000
Central government		
Assets	414	439
Liabilities	(1,374)	(1,279)
Net financial wealth	(960)	(840)
National pension system		
Assets	752	801
Liabilities	(8)	(2)
Net financial wealth	744	799

Source: Swedish Ministry of Finance.

As part of a reform of the pension system, the AP funds transferred to the government SEK245 billion of its cash, government bonds, and mortgage bonds during the period from 1999 through 2001. The largest transfer, in January 2001, had a market value of SEK155 billion, and consisted of government bonds for SEK85 billion and mortgage bonds for SEK70 billion. The transfer of government bonds amounted to 10 percent of the outstanding debt of kronor bonds at the end of December 2000, and approximately 5 percent of the total government debt. The transfer of assets from the AP funds was done to compensate the central government budget for some extra costs. Also, with the new, more sustainable pension system the AP funds were considered to be too large.

Central Banks Have Responded to Lower Debt Levels

As government debt levels have fallen, four of the five central banks have reduced their holdings of government bonds; however, most have held an increasing percentage of total outstanding government debt. (See table 9.)

The U.S. Federal Reserve's holdings of U.S. Treasury securities in its portfolio in 2000 ranked higher than central banks in any of the study nations. Sovereign debt represented 85 percent of the U.S. Federal Reserve's portfolio while it equaled only 5.8 percent of the Bank of England's portfolio. Central banks in all study countries except New Zealand reduced the percentage of government securities in their portfolios. While the U.S. Federal Reserve decreased the percentage of government bonds in its portfolio in 1999, this percentage increased in 2000. Central bank officials in the study countries told us they have expanded their investments in other asset classes, such as state debt and

government enterprises, at the same time. Central banks in some study countries increased holdings of U.S. government corporation and federal agency bonds, such as securities issued by the U.S. Government National Mortgage Association (Ginnie Mae) and Fannie Mae.

Table 9: Central Banks' Ownership of Domestic Central Government Securities

Country (amounts)	Government securities as a percentage of central bank's assets	Government securities owned by central bank, as percentage of total government securities
United States (US\$billion)		
1998 : 456.3	83.8 %	12.5 %
1999 : 483.7	71.7 %	12.9 %
2000 : 518.4	85.0 %	15.8 %
Australia (AU\$billion)		
1998 : 11.4	24.2 %	10.7 %
1999 : 9.3	18.9 %	8.7 %
2000 : 6.9	12.4 %	8.8 %
New Zealand (NZ\$billion)		
1998 : 2.1	19.4 %	5.4 %
1999 : 2.2	18.6 %	5.9 %
2000 : 2.4	24.6 %	6.5 %
Norway (NOKbillion)		
1998 : 9.8	5.1 %	3.8 %
1999 : 10.8	4.4 %	4.2 %
2000 : 13.5	4.5 %	4.7 %
Sweden (SEKbillion)		
1998 : 32.8	15.3 %	2.3 %
1999 : 28.9	12.7 %	2.1 %
2000 : 20.7	8.9 %	1.6 %
United Kingdom (£billion)		
1998 : £1.4	10.0 %	0.46 %
1999 : £1.3	6.6 %	0.46 %
2000 : £1.4	5.8 %	0.48 %

Notes: Data as of end of fiscal year for each country. The 1999 figures include the effects of preparations for the year 2000.

Sources: Central banks' annual reports and *U.S. Treasury Bulletins*.

During the recent budget surpluses in the United States, the U.S. Federal Reserve has made several adjustments to its operations and has studied the question of what alternative assets might replace some U.S. Treasury securities in its portfolio. In July 2001, the Federal Reserve reported that, for the near term, it was considering purchasing and holding mortgage-backed securities from Ginnie Mae,²⁴ and engaging in repurchase

²⁴Mortgage-backed securities of Ginnie Mae are explicitly backed by the full faith and credit of the U.S. government.

agreements backed with foreign sovereign debt. The Federal Reserve is studying other steps for possible implementation later. For many years, Treasury securities have been used by the Federal Reserve both to add to its permanent asset portfolio and for the conduct of monetary policy. The high liquidity of Treasury securities allowed the New York Federal Reserve Bank to conduct large buy-sell operations quickly and with little disruption to capital markets. Treasury securities also allowed the Federal Reserve to avoid credit risk in its portfolio and the potential for distorting the allocation of credit to private entities.

The U.S. Federal Reserve made several adjustments to its operations in response to actual and prospective reduction in Treasury securities. In 2000 the Federal Reserve started to limit its holdings of individual Treasury bills to 35 percent of the total amount of each issue outstanding and of longer-term securities declining to 15 percent. If the Federal Reserve had not adopted these limits, its holdings of Treasury securities would have been significantly higher than the increase of \$34.7 billion that occurred in 2000. The Federal Reserve satisfied its demand for longer-term reserves by increasing its holdings of longer-term repurchase agreements.²⁵ The Federal Reserve held an average of more than \$15 billion of about 1-month repurchase agreements in 2000. The reappearance of deficits may prompt reconsiderations of these actions in the near future.

Implications and Future Issues for the United States

The debt management policies and experiences of all five of the selected industrial nations have followed generally similar paths to each other as they moved from deficits to a period of surpluses. The experiences and approaches of the five nations we studied have relevance to or provide useful insights for debt management in the United States both in times of budget deficits and surpluses.

All Study Countries and the United States Have Experienced Budget Deficits and Surpluses

Because of the current global economic slowdown, the United States and the study countries face the prospect of budget deficits and increased borrowing and debt levels. Several study countries experienced a similar fiscal deterioration in the late 1980s and early 1990s.

²⁵In a repurchase agreement an entity, like a central bank, purchases securities from a counterparty, like a bank, and simultaneously agrees to sell them back on a specified future date.

The timing and size of the budget surpluses in the other nations we studied have been different from projected surpluses in the United States. Four of the study countries—Australia, Norway, Sweden, and the United Kingdom—experienced a cycle of surplus to deficit then surplus again in 12 years (1988 through 1999). For the United States there was a gap of nearly 30 years between its 1969 and 1998 unified budget surpluses.

Budget surpluses in the other nations, except Norway, had been possible because of strong economic conditions and targets that focused on budget balance (or small surplus).²⁶ All of the study countries, except Sweden, reported lower gross debt-to-GDP and net debt-to-GDP ratios in 2000 than in 1988. While Norway's surpluses are large and projected to continue in the medium term, the sources of the revenues are quite different. In Norway, large revenues from oil activities are the main source of budget surpluses that began in 1994. Although each of the study countries had a budget surplus in 2000, shifts to deficits would influence debt management.

Debt Management Choices

Managing declining debt as the budget is in surplus presents different challenges than managing growing debt in a budget deficit. Maintaining liquidity and market efficiency are more difficult in a period of budget surpluses. The United States faces challenges similar in part to those faced by study countries. However, the timing and size of its budget surplus may be different and pose additional challenges for the United States. Managing debt if the surplus is projected to be large and sustained would be different from managing debt when budget projections are uncertain or fiscal targets focus on budget balance (or a small surplus) over the economic cycle.

In the late 1990s, the U.S. Treasury had to devise strategies to manage large, continuing surpluses. If U.S. debt managers had used cash surpluses to reduce debt rollover without taking other steps, they would have faced large changes in average maturity and liquidity that could have increased the government's cost of financing. Because a debt buyback program of regular reverse auctions can operationally handle relatively large volumes and because the U.S. Treasury values regularity and predictability, the Treasury chose to implement a debt buyback program of regular reverse

²⁶Targets in New Zealand, Sweden, and the United Kingdom focus on balance (or a small surplus) across the economic cycle.

auctions with advance announcements of the size and targeted issues. Other nations' experiences suggest that less transparent buybacks may achieve savings in the short term, but, over the long term, market prices may incorporate a premium to compensate sellers for the lack of transparency. The nations' experiences also suggest that, over time, buybacks may become more costly as a government seeks to purchase more debt from the markets. This suggests that the Treasury may consider supplementing buybacks with other tools consistent with our values and debt management goals.

Some other debt management tools used regularly in other nations may hold promise for the United States and be compatible with the values of transparency, predictability, and equal access. Repurchasing debt within a short time before it matures and open window repurchases are used abroad to allow investors to offer securities to the government, which then has the option to repurchase them at market rates. These programs act as both debt management and cash management tools—reducing outstanding debt and smoothing cash flows. As with a buyback program, the government could choose which issues to repurchase. However, with these programs, both the cost of the repurchases and the amount of debt repurchased may be lower than with reverse auctions. Debt exchanges are used in three of the five study countries to promote liquidity of benchmark securities by exchanging outstanding debt securities for newly issued, more liquid benchmark securities. The U.S. Treasury now is studying the advisability and feasibility of debt exchanges. Switch auctions are used in the United Kingdom when the amount of debt to be converted into newly issued securities is too large to be appropriate for a debt exchange. Switch auctions also may hold promise for the U.S. Treasury in supporting the creation of large benchmark issues without increasing outstanding debt.

While the United States may experience budget deficits in the near term, the U.S. Treasury still has the challenge of managing debt to achieve its goals of ensuring that the government's financing needs are met, minimizing long-term cost, and promoting efficient capital markets. A number of the techniques described above could be used to manage debt in times of deficits as well as surpluses. Open windows are useful for both cash and debt management purposes. Debt exchanges and switch auctions are used abroad to promote liquidity of benchmark securities. However, they also could be used to manage the maturity of outstanding debt and, indirectly, to minimize long-term costs.

The budgetary surpluses of recent years that were achieved by fiscal discipline and strong economic growth positioned us well to respond to

both the events of September 11, 2001, and to the economic slowdown. While some acknowledge that the budget may dip into deficit in the short term, once the economy rebounds the budget is poised to return to surplus. For example, the Senate and House Committees on the Budget, on a bipartisan basis, endorsed a long-term fiscal policy to maintain surpluses equal to the Social Security surplus. For the long-term, sustained budgetary surpluses bolster the nation's economic capacity to afford the burgeoning costs of the baby boom retirement. Other nations have used debt reduction and investment in financial assets as a way to achieve national goals and to prepare for future demographic changes. Several study nations have recognized potential governance issues associated with ownership of longer-term assets. The United States might be faced with similar issues in the future should we return to surpluses.

We are sending copies of this report to the Ranking Minority Member, House Committee on Ways and Means; the Ranking Minority Member, Subcommittee on Social Security, House Committee on Ways and Means; the Chairman, Senate Committee on the Budget; the Chairmen and Ranking Minority Members, House Committee on the Budget, Senate Committee on Finance, and House Committee on Financial Services. We also are sending copies to the Chairman of the Federal Reserve Board, the Secretary of the Treasury, Director of the Congressional Budget Office, Director of the Office of Management and Budget, and other interested parties. We also will make copies available to others upon request.

If you or your staffs have any questions concerning this report, please contact me at (202) 512-9573. Key contributors to this assignment were Thomas James, Jose Oyola, Carolyn Litsinger, Melinda Bowman, and Quan Thai.



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